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REMARK

Claims 1-25 are pending in the application. Claims 13 and 22 are canceled without prejudice or a disclaimer. Claims 1-12, 13, 14, 17, 19-21, and 23 stand rejected. Claims 1, 9, 12, 17, and 18 are independent claims.

Claims 26 and 27 are added. Support can be found in previous claim 13.

Entry of each claim is respectfully solicited.

The Applicant wishes to thank the Examiner for indicating that claims 15 and 16 would be allowed if rewritten as independent claims incorporating all features of the base and any intervening claims. At this time, the Applicant wishes to defer rewriting any one of claims 15 and 16 as each pending claim, as noted below, are patentable.

Claims 1, 9, 12, 17, and 18 stand rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Murto (U.S. 6,356,026) in view of Raspagliesi *et al.* (U.S. 5,144,143) ("Raspagliesi").

Claim 1 recites a cathode sub-assembly comprising "a support rod being fixedly attached to the interior area of the... cathode..., the... cathode configured to emit electrons... that collide with gas molecules within the arc chamber to produce ions for implantation." Each of claims 9, 12, 17, and 18 recites similar features.

Each of the independent claims 1, 9, 12, 17, and 18 is amended to clarify the claim. No new feature is introduced into each claim, and the amendment to each claim does not necessitate a new search.

According to the United States Court of Appeals for the Federal Circuit, a rejection of a claim under 35 U.S.C. § 103(a) requires showing of *prima facie* case of obviousness (*In re Rouffet*, 149 F.3d 1350, 47 USPQ2d 1453 (Fed. Cir. 1998)). Section 2143.03 of the Manual of

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the Patent Examining Procedure (the "MPEP") indicates that the *prima facie* case cannot be established unless references cited by the Patent Office teach ALL features of the claim (see also *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1970)).

In rejecting claim 1, the Patent Office indicates that Murto fails to teach the support rod attached to the interior area of the cathode (the present Office Action, page 3, line 5-6). According to the Patent Office, claim 1, however, is not patentable as Raspagliesi teaches a support 23 that is attached to the metal 24, two components that the Patent Office deems equivalent to the support rod and indirectly heated cathode of claim 1, respectively (see *id.*, at line 7-9). As such, the Patent Office alleges that the combination of Murto and Raspagliesi teaches all features of claim 1, rendering claim 1 obvious (see *id.*).

As acknowledged by the Patent Office, Murto fails to teach the support rod attached to the interior area of the cathode, much less a cathode sub-assembly comprising "a support rod being fixedly attached to the interior area of the... cathode..., the... cathode configured to emit electrons... that collide with gas molecules within the arc chamber to produce ions for implantation," as recited in claim 1.

Raspagliesi, as read by the Applicant, discloses an ion source comprising a support 23 that is attached to the metal 24. The metal 24 of Raspagliesi, however, is NOT a cathode configured to emit electrons that collide with gas molecules to produce ions (column 4, line 2-3). The metal 24, instead, is merely a sputtering target that is configured to emit its own ATOMS after being bombarded by ionized noble gas, the atoms that are ultimately ionized by the electrons emitted from the filament 20 (*id.*, at line 1-4).

Therefore, the support 23 attached to the metal sputtering target 24, as disclosed in Raspagliesi, is NOT the support rod of claim 1 that is attached to the cathode that emits electrons

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that collide with gas molecules to produce ions. The support 23 of Raspagleisi, instead, is different from the support rod of claim 1, and the ion source of Raspagliesi containing such a different support 23 attached to the metal 24 has a structure different from the structure of the cathode sub-assembly of claim 1.

According to the MPEP 2114, an apparatus of a reference does not teach an apparatus of a claim if two apparatuses have different structures. As such, Raspagliesi teaching an ion source with structure different from the cathode sub-assembly of claim 1, fails to teach a cathode sub-assembly comprising "a cathode sub-assembly comprising "a support rod being fixedly attached to the interior area of the... cathode..., the... cathode configured to emit electrons... that collide with gas molecules within the arc chamber to produce ions for implantation," as recited in claim 1

As both Murto and Raspagliesi fails to teach the cathode sub-assembly of claim 1, Murto, Raspagliesi, and their combination fail to teach all features of claim 1 or render claim 1 obvious. Moreover, Murto, Raspagliesi, and their combination fail to teach claims 9, 12, 17, and 18, which recites feature similar to those of claim 1, or render claims 9, 12, 17, and 18 obvious.

The Applicant respectfully requests withdrawal of the rejections.

Claim 12, in addition to the reason stated above, is patentable as it recites a cathode assembly comprising a filament, where "a cross-sectional area of the filament varies along a length of the filament..."

In rejecting claim 12, the Patent Office indicates that Murto discloses a cathode assembly comprising a filament that has varying cross-sectional area, particularly along at two ends (the present Office Action, page 7, line 4).

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The Applicant respectfully submits that nowhere within the specification and figures of Murto is there a disclosure that the cross-sectional area of any one of its filaments 70 of 78 varies along its length, particularly at its ends. Therefore, Murto does not teach a cathode assembly comprising "a filament... wherein a cross-sectional area of the filament varies along a length of the filament, and is smallest along the arc-shaped turn," as recited in claim 12.

Meanwhile, Raspagliesi also fails to teach "a filament... wherein a cross-sectional area of the filament varies along a length of the filament, and is smallest along the arc-shaped turn," as recited in claim 12.

As such, Murto, Raspagliesi, and their combination fail to teach all features of claim 12 or render claim 12 obvious.

The Applicant respectfully requests withdrawal of the rejection on claim 12.

Claim 25 stands rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Murto in view of Raspagliesi.

Claim 25 recites a cathode sub-assembly, wherein "the support comprises a first surface having an edge directly coupled to the indirectly heated cathode, and wherein the filament is disposed around the first surface in close proximity to the cathode."

Support can be found in FIG. 1.

Applicant respectfully submits that neither Murto nor Raspagliesi discloses "a cathode sub-assembly, wherein "the support comprises a first surface having an edge directly coupled to the indirectly heated cathode, and wherein the filament is disposed around the first surface in close proximity to the cathode," as recited in claim 25 (see FIG. 1-6 of Murto and FIG 1 and 3 of Raspagliesi (disclosing that the filament 20 does not encircle the support 23)). As

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such, Murto, Raspagliesi, and their combination fail to teach all features of claim 25, and claim 25 is patentable over Murto, Raspagliesi, and their combination.


The Applicant respectfully requests withdrawal of the rejection on claim 25.

Other claims in this application are each dependent on the independent claims 1, 9, 12, 17, and 18, and believed to be patentable for at least the reasons noted above. Since each dependent claim, however, is also deemed to define other aspects of the invention, individual consideration of the patentability of each on its own merit is respectfully requested.

Should the Examiner deem that there is any issue which may be best resolved by telephone, the Examiner is respectfully requested to contact the undersigned representative. Please charge any additional fees or credit any overpayments to deposit account No. 50-0896.

Respectfully submitted,
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Date: 5/15/07

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